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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,974	YOGESHWAR ET AL.	
	Examiner	Art Unit	
	David N. Werner	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-10,12-19,21-28,30,31,33-38,40-51 and 53-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-10,12-19,21-28,31,33-38,40-51 and 53-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20090109, 20090319*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office action for U.S. Patent Application 10/826,974 is responsive to communications filed 09 January 2009, in response to the Non-Final Rejection of 09 July 2008. Currently, claims 1, 2, 4–10, 12–19, 21–28, 30–38, 40–51, and 53–55 are pending.

2. In the previous Office action, claims 11, 20, 29, 32, 39, 52, and 56 were rejected under 35 U.S.C. 101 as non-statutory. Claims 1–3, 7, 8, 10–15, 17, 18, 20–30, 32, 33, 35–43, 47, 48, 50–53, and 56 were rejected under 35 U.S.C. 102(e) as anticipated by U.S. Patent 6,647,061 B1 (Panusopone et al.). Claims 5, 6, 9, 19, 31, 46, and 49 were rejected under 35 U.S.C. 103(a) as obvious over Panusopone et al. in view of "H.264 – A New Technology for Video Compression" (Nuntius). Claim 4 was rejected under 35 U.S.C. 103(a) as obvious over Panusopone et al. in view of Nuntius and in view of "Intensity Controlled Motion Compensation" (Kari et al.). Claim 16 was rejected under 35 U.S.C. 103(a) as obvious over Panusopone et al. in view of "Microsoft Debuts New Windows Media Player 9 Series". Claims 34, 44, 54, and 55 were rejected under 35 U.S.C. 103(a) as obvious over Panusopone et al. in view of "Overview of MPEG-2 Test Model 5" (TM5).

Response to Arguments

3. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection. Claim 1 has been amended to incorporate

motion estimation in the computation of new motion vectors, whereas in Panusopone et al., new motion vectors are simply scaled during the conversion. However, "Motion Vector Synthesis Algorithm for MPEG2–To–MPEG4 Transcoder" (Takahashi et al.) teaches a transcoder in which the scaled motion vectors are used as the basis to search for a more accurate final motion vector in the transcoded video. By including the motion vector refinement of Takahashi et al. in the transcoder of Panusopone et al., the claimed step of performing motion estimation to compute plural new motion vectors. Takahashi et al. describes the advantages of this approach both over a transcoder in which a full motion vector search is performed, thus proving prohibitively complex or slow, and a transcoder in which motion vectors are only scaled, as in Panusopone et al.

Next considering Applicant's remarks against the Kari reference, it is respectfully submitted that "Global Brightness-Variation Compensation for Video Coding" (Kamikura et al.) more clearly and unambiguously discloses the claimed "intensity compensation to scale and/or shift values in a reference picture". As shown in equation 2, a current pixel I(x,y,t) is described as related to the corresponding pixel I(x',y',t-1) in the previous picture as a function of global brightness variation parameters c and d. Parameter c, which is a factor by which the brightness, or intensity, of the previous pixel is multiplied, is a scaling parameter, and parameter d, which is a term added to the scaled brightness, is a shifting parameter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 7, 8, 10, 12–15, 17, 21–28, 30, 33, 35–38, 40–43, 45, 47, 50, 51, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,647,061 B1 (Panusopone et al.) in view of "Motion Vector Synthesis Algorithm for MPEG2-To-MPEG4 Transcoder (Takahashi et al.) and in view of "Global Brightness-Variation Compensation for Video Coding" (Kamikura et al.). Panusopone et al. teaches a transcoder that converts an MPEG-4 bitstream, which was known in the art at the time of the invention to produce similar quality video at a lower bit rate. Regarding claim 1, figure 4 illustrates one embodiment of the transcoder of Panusopone et al., in which B frames are enabled, and figure 3 illustrates an additional embodiment in which B frames are disabled in the output bitstream. Both transcoders share a number of components and functionalities (column 7: lines 10-23). In Panusopone et al., header decoding function 304 decodes MPEG-2 headers and produces a look-up table to re-build MPEG-4 headers (column 6: lines 48-51). This is the claimed step of obtaining type values. The transcoder also provides for a series of MPEG-2 decoding steps, such as variable length decoding, inverse scan, inverse quantization, and inverse DCT (figure 4A). This is claimed step of decompressing the compressed video in the source format. The transcoder additionally performs MPEG-4 encoding steps such as DCT,

Quantization, AC/DC prediction, Scan/Run-Length Coding, and Variable-Length Coding (Figure 4B). This is the claimed step of re-compressing video in a target format. As can be shown in the tables, many of the headers in the target MPEG-4 bitstream are either directly derived from, or the same as, the headers in the source MPEG-2 bitstream (column 8: lines 37-54). Then the MPEG-2 are the claimed "plural source format syntax elements". "Generally, the same coding mode which is used in MPEG-2 coding should be maintained. This mode is likely to be the optimum in MPEG-4 and hence avoids the complexity of the mode decision process" (column 8: lines 23-27). This corresponds with the claimed step of making coding decisions during recompression to match quality based on obtained type values. The actual recompression steps of MPEG-4 are done independently from decoded data (column 7: lines 45-67). This is claimed step of making independent coding decisions in recompressing video to take advantage of the target format.

The present invention differs from Panusopone et al. in that in the present invention, a new motion estimation is performed to generate motion vectors in the re-compressed image, whereas in Panusopone et al., MPEG-4 motion vectors are merely scaled or statistically determined from the motion vectors of the source MPEG-2 video, and in the present invention, intensity compensation is used to scale or shift values in the reference pictures, which Panusopone et al. does not disclose.

Takahashi et al. teaches a MPEG-2 to MPEG-4 transcoder, similar to Panusopone et al. Figure 2 illustrates the transcoder in Takahashi et al. In determining MPEG-4 motion vectors, motion vectors are first synthesized using conventional scaling

techniques as in Panusopone et al. However, at a next "MV refinement step", a new motion vector is searched "in the proximity of the scaled MV in order to decrease the error induced" in the scaling (pg. 875). This search is the claimed step of performing motion estimation using motion vector information from the compressed video by guiding searching in a motion estimation search area. As stated in sections 1 and 2, this greatly reduces the computational cost from performing a full motion vector search as in a cascade-type transcoder as shown in figure 1, and so is considered to "speed up" the motion estimation.

The transcoder of Panuspone et al., like the four transcoders cited in section 2 of Takahashi et al., which scale or average source motion vectors in determining each output motion vector, is considered a base device upon which the claimed invention, incorporating the fast motion estimation, is seen as an improvement. Additionally, as shown in Takahashi et al., it was known in the art to improve a heterogeneous transcoder using a limited motion vector search to produce refinement motion vectors in the output image. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to incorporate the motion vector refinement of Takahashi et al. in the transcoder of Panusopone et al. to produce the predictable result and improvement of more accurate output motion vectors, since it has been held that to apply a known technique to a known method ready for improvement to yield predictable results involves only routine skill in the art. *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976), *In re Nilssen*, 851 F.2d 1401, 7 USPQ2d 1500 (Fed. Cir. 1988).

Regarding the claimed step of "using intensity compensation to scale and/or shift values in a reference picture", Kamikura et al. teaches a system for compensating for a universal shift in pixel brightness, or intensity, in coding a frame. Equation 2 illustrates a current pixel as a function of the corresponding pixel in the previous picture and brightness variation parameters c and d. Factor c performs the claimed "scaling" and term d performs the claimed "shifting". These parameters, when calculated (§II.B), may be used to generate a motion compensated image in which the brightness variation is compensated (§II.C.).

Panusopone et al., in combination with Takahashi et al., discloses the claimed invention except for intensity compensation. Kamikura et al. teaches that it was known to perform intensity compensation in image encoding. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to incorporate the intensity compensation of Kamikura et al. in the encoding portion of the transcoder of Panusopone et al., since Kamikura et al. states in section IV that this would increase coding accuracy in such situations as fades or changes in lighting in the duration of the motion image.

Regarding claim 2, as shown in figure 4A of Panuspone et al., header decoding 304 is processed on the MPEG-2 input bitstream before the first decoding step 405.

Regarding claim 7, in Panusopone et al., although motion vector mode is generally maintained, with the notable exception of converting intra-mode B macroblocks with direct mode B macroblocks (column 14: line 64–column 15: line 63), if

an advanced prediction mode is used, the predictor value in the MPEG-4 target bitstream is independently derived (column 14: lines 64-65).

Regarding claim 8, in Panusopone et al., the MPEG-2 bitstream is completely decoded to pixel data (column 10: lines 37-39).

Regarding claim 10, as described in Panusopone et al., MPEG-4 was known to use a more efficient variable length coding system than MPEG-2. The target bit stream is encoded with this efficient coding (column 13: lines 62-67).

Regarding claim 12, MPEG-2 operates on pictures and MPEG-4 operates on Video Object Planes (VOPs) (column 8: line 64), with the VOP restricted in Panusopone et al. to correspond exactly with the MPEG-2 pictures (column 8: lines 18-33), with the VOP types being I-VOP, P-VOP, and B-VOP (column 14: line 37).

Regarding claim 13, Panusopone et al. takes advantage of the improved entropy coding of MPEG-4 (column 13: lines 62-67) to achieve greater compression for substantially every frame.

Regarding claim 14, Table 5 of Panusopone et al. shows that nearly all macroblock headers in the MPEG-4 target stream are derived from the macroblock headers in the MPEG-2 source stream (column 11).

Regarding claim 15, in Panusopone et al., macroblock coding type is preserved (column 7: lines 32-40), except intra macroblocks in B pictures are converted to direct mode macroblocks (column 15: lines 42-63). These macroblock types comprise the claimed intra and inter coding types.

Regarding independent claim 17, as shown above, the transcoder of Panusopone et al. performs the claimed steps of obtaining picture type values, fully decompressing the compressed video, re-compressing the video, making picture type decisions, and using the various first and second format type values. Takahashi et al. performs the claimed motion estimation and compensation including the fast motion estimation from motion vector information from the compressed video. Kamikura et al. performs the claimed intensity compensation.

Regarding claim 21, MPEG-2 operates on pictures and MPEG-4 operates on Video Object Planes (VOPs) (column 8: line 64), with the VOP restricted in Panusopone et al. to correspond exactly with the MPEG-2 pictures (column 8: lines 18-33), with the VOP types being I-VOP, P-VOP, and B-VOP (column 14: line 37).

Regarding claims 22 and 23, the picture type restriction in Panusopone et al. inherently preserves picture order and the structure of an MPEG-4 Video Object Layer (VOL), the equivalent to a Group of Pictures (GOP).

Regarding independent claim 24, Panusopone et al. teaches the claimed steps of obtaining frame/field information (column 15: liens 6–7), fully decompressing the compressed video, re-compressing the video, and making coding decisions from the first and second format syntax elements including frame/field information. Takahashi et al. performs the claimed motion estimation and compensation including the fast motion estimation from motion vector information from the compressed video. Kamikura et al. performs the claimed intensity compensation.

Regarding claim 25, in Panusopone et al., the field or frame MV coding is set at the macroblock layer (column 13: lines 25-27).

Regarding claim 26, in Panusopone et al., interlacing is set at the VOL layer, with top or bottom field first set at the VOP layer (Table 3).

Regarding claim 27, Panusopone et al. takes advantage of the improved entropy coding of MPEG-4 (column 13: lines 62-67) to achieve greater compression for substantially every frame.

Regarding claim 28, in Panusopone et al., the introduction of direct mode MBs to replace inter MBs in B-VOPs (column 15: lines 49-63) is stated to improve coding efficiency (column 5: line 60–column 6: line 8).

Regarding independent claim 30, Panusopone et al. teaches the claimed steps of obtaining quantization levels for compressed video (column 13: lines 44–54; column 14: lines 44–54), decompressing the video, re-compressing video, setting quantization levels based on the obtained quantization levels, and using the first and second format syntax elements including quantization levels. Takahashi et al. performs the claimed motion estimation and compensation including the fast motion estimation from motion vector information from the compressed video. Kamikura et al. performs the claimed intensity compensation.

Regarding claim 33, table 5 of Panusopone et al. shows MPEG-4 quantization to be at the macroblock level.

Regarding claim 35, in Panusopone et al., MPEG-2 QP directly determines the dquant value in the MPEG-4 stream (column 13: lines 49-54), shown in Table 5 to be at the macroblock level.

Regarding claim 36, Panusopone et al. restricts quantization fluctuations according to MPEG-2 rate control, and regarding claim 37, the setting of the MPEG-4 quantization according to this rate control is designed to minimize the re-quantization loss from the MPEG-2 quantization (column 14: lines 44-54) and to reduce drift, or a difference between the original frame and reconstructed frame (column 13: lines 46-48).

Regarding independent claim 38, Panusopone et al. performs the claimed obtaining macroblock-level quantization levels, decompressing, the claimed re-compressing, the setting quantization levels from obtained quantization levels, by deriving MPEG-4 quantization parameters from the source MPEG-2 compression parameters (column 13: lines 44–54; column 14: lines 44–54), and using the first and second format syntax elements. Takahashi et al. performs the claimed motion estimation and compensation including the fast motion estimation from motion vector information from the compressed video. Kamikura et al. performs the claimed intensity compensation.

Regarding claims 40 and 41, in Panusopone et al., quantization levels in both MPEG-2 and MPEG-4 are differential quantization step sizes presented at the macroblock layer (column 13: lines 49-54).

Regarding claim 42, Panusopone et al. restricts quantization fluctuations according to MPEG-2 rate control (column 14: line 44–column 14: line 54).

Regarding independent claim 43, Panusopone et al. performs the claimed obtaining macroblock-level quantization levels, decompressing, the claimed re-compressing, the setting quantization levels from obtained quantization levels to reduce differences in quality, by deriving MPEG-4 quantization parameters from the source MPEG-2 compression parameters (column 13: lines 44–54; column 14: lines 44–54), and using the first and second format syntax elements. Takahashi et al. performs the claimed motion estimation and compensation including the fast motion estimation from motion vector information from the compressed video. Kamikura et al. performs the claimed intensity compensation.

Regarding claim 45, Panusopone et al. controls quantization fluctuation at the macroblock level (column 14: lines 44-46).

Regarding claim 47, in Panusopone et al., the rate control is designed to minimize the re-quantization loss from the MPEG-2 quantization (column 14: lines 44-54) and to reduce drift, or a difference between the original frame and reconstructed frame (column 13: lines 46-48).

Regarding claim 50, in Panusopone et al., although motion vector mode is generally maintained, with the notable exception of converting intra-mode B macroblocks with direct mode B macroblocks (column 14: line 64–column 15: line 63), if

an advanced prediction mode is used, the predictor value in the MPEG-4 target bitstream is independently derived (column 14: lines 64-65).

Regarding claim 51, MPEG-4 was known to use a more efficient variable length coding system than MPEG-2. The target bit stream is encoded with this efficient coding (column 13: lines 62-67).

Regarding independent claim 53, Panusopone et al. performs the decompressing, the claimed re-compressing, the regulating compression parameters to produce a steady bitrate, by deriving MPEG-4 quantization parameters from the source MPEG-2 compression parameters (column 13: lines 44–54; column 14: lines 44–54), and using the first and second format syntax elements. Takahashi et al. performs the claimed motion estimation and compensation including the fast motion estimation from motion vector information from the compressed video. Kamikura et al. performs the claimed intensity compensation.

6. Claims 4–6, 9, 18, 19, 31, 46, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panusopone et al. in view of Takahashi et al. and Kamikura et al. as applied to claims 1, 17, 30, and 43 above, and further in view of "H.264 – A New Technology for Video Compression" (Nuntius). Nuntius describes the H.264 video coding standard, especially in comparison with MPEG-2 and MPEG-4.

Regarding claims 4, 18, and 48, Nuntius demonstrates that H.264 coding included a deblocking filter (Table 1), known to be typically implemented as a loop filter.

Regarding claim 5, table 1 of Nuntius shows that H.264 uses 1/4 pixel motion estimation rather than ½ pixel motion estimation.

Regarding claims 6, 9, 19, 31, and 49, Table 1 of Nuntius also shows that H.264 uses a 4 x 4 Integer Transform rather than 8 x 8 Discrete Cosine Transform, and so is considered a "variable-sized frequency transform" that is "different" from the H.262 transform. In a transcoder from MPEG-2 to H.264, the transform process would be re-encoded similar to the quantization re-encoding of Panusopone.

Regarding claim 46, Nuntius states that H.264 produces an improvement in compression efficiency of about 2X over MPEG-4, which is slightly more efficient than MPEG-2 (pg. 1).

Panusopone et al., in combination with Takahashi et al. and Kamikura et al., discloses the present invention except Panusopone et al. transcodes from MPEG-2 to MPEG-4. Nuntius teaches that H.264 coding was known at the time of the invention. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transcoder of Panusopone et al. to produce H.264 video, as taught by Nuntius, since Nuntius states in page 1 that such a modification would yield a video bitstream with twice the compression ratio for similar quality as MPEG-4 video.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over al. in view of Takahashi et al. and Kamikura et al. as applied to claim 1 above, and further in

view of "Microsoft Debuts New Windows Media Player 9 series" (WMV Press Release). The WMV Press Release describes the WMV 9 video compression standard.

Panusopone et al., in combination with Takahashi et al. and Kamikura et al., discloses the present invention except Panusopone et al. transcodes from MPEG-2 to MPEG-4. The Press Release teaches that WMV 9 coding was known at the time of the invention. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transcoder of Panusopone et al. to produce WMV 9 video, as taught by the Press Release, since the Press Release states in page 1 that such a modification would yield a video bitstream with treble the compression ratio for similar quality as MPEG-2 video.

8. Claims 34, 44, 54, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over al. in view of Takahashi et al. and Kamikura et al. as applied to claims 30, 43, and 53 above, and further in view of "Overview of MPEG-2 Test Model 5" (TM5). Test Model 5 is the main rate control model for MPEG-2. Since Panusopone et al. operates according to MPEG-2 rate control (column 14: lines 45-46), Test Model 5 is assumed to be incorporated into Panusopone et al. Regarding claims 34 and 44, TM5 operates on a "global complexity measure" for a picture type, based on an "average quantization parameter computed by averaging the actual quantization values used during the encoding of all the macroblocks" in a frame of its type (pg. 6).

Regarding claim 54, TM5 performs rate control "by means of a 'virtual buffer'" (pg. 6), with a quantization parameter set on its fullness (pp. 9-11).

Regarding claim 55, the buffer fullness is calculated according to a difference between an initial buffer fullness and actual number of bits needed to encode a picture with the target number of bits (pp. 9-10).

Panusopone et al., in combination with Takahashi et al. and Kamikura et al., discloses the claimed invention except for details of rate control. TM5 teaches the MPEG-2 Rate Control system in detail. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate Test Model 5 into the transcoder of Panusopone et al., since TM5 states in page 1 that this is the preferred method of rate control in MPEG-2.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571)272-9662. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. N. W./
Examiner, Art Unit 2621

/Mehrdad Dastouri/
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